

***** DEER MOUSE *****

*** NORMALIZING AND CONTACT RATE FACTORS ***

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
BODY WEIGHT													
Abbott 1974 (cooledgei)	A	B	-	-	20.8		g			28.9 N latitude	NS		As cited in MacMillen and Garland 1989.
Brower & Cade 1966 (gracilis)	A	B	-	-	17.0		g			44.4 N latitude	NS		As cited in MacMillen and Garland 1989.
Dewsbury et al. 1980 (bairdii)	A	M	-	-	16.2		g			NS	lab reared		As cited in Montgomery 1989.
	A	F	-	-	15.2		g						
Dewsbury et al. 1980 (blandus)	A	M	-	-	22.3		g			NS	lab reared		As cited in Montgomery 1989.
	A	F	-	-	21.1		g						
Drickamer & Bernstein 1972	A	F	-	-	19		g			25	Nebraska	North Platte Valley	As cited in Millar 1989.
Fairbairn 1978	A	M	-	SP	17.8		g			NS	NS		As cited in Montgomery 1989.
	A	F	-	SP	16.1		g						
Fairbairn 1977	S	B	-	-	15		g			Vancouver, CAN	2nd-growth coastal rain forest		Weight at which mouse assumed to be sexually mature.
Fordham 1971 (austerus)	A	M	-	SP	15.7		g			NS	NS		As cited in Montgomery 1989.
	A	F	-	SP	14.8		g						
Glazier 1979	A	F	-	-	14		g			10	Maine	Bar Harbor area	As cited in Millar 1989.
Halfpenny 1980	A	F	BR	-	21		g			Colorado	NS		As cited in Millar 1989.
Hayward 1965 (nebrascensis)	A	B	-	-	18.9		g			20	45.2 N lat., Wyoming	alpine	Latitude identified by MacMillen and Garland 1989.
Hayward 1965 (artemisiae)	A	B	-	-	23.2		g			20	49.2 N lat., British Columbia, CAN	arid valley	Latitude identified by MacMillen and Garland 1989.
Hayward 1965 (austerus)	A	B	-	-	19.5		g			20	British Columbia, CAN	mesic coast	
Hayward 1965 (sonoriensis)	A	B	-	-	20.4		g			20	Nevada	high altitude desert	

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
Hayward 1965 (oreas)	A	B	-	-	24.6		g			20	British Columbia, CAN	subalpine	
Linzey 1970	A	F	-	-	18		g				Tennessee	Smoky Mountains	As cited in Millar 1989.
McCabe & Blanchard 1950	A	F	-	-	19		g				California	NS	As cited in Millar 1989.
McNab & Morrison 1963 (gambelii)	A	B	-	-	19.1	0.13	SE g			29	37.9 N lat., CA 1957	chaparral near stream	
McNab & Morrison 1963 (sonoriensis)	A	B	-	-	24.2	0.18	SE g			29	38.0 N lat., Nevada	chaparral	Found at altitude of 6 to 7 thousand feet.
Millar 1989	A	F	-	-	20		g				N America, average	NS	
	A	M	-	-	22		g						
Millar & Innes 1983 (borealis)	A	F	NB	-	20.3	0.42	SE g			40	NS	lab	
	A	F	G	-	31.5	0.43	SE g			44			
	A	F	L	-	24.5	0.37	SE g			37			
Millar 1989	A	F	-	-	20		g				US average	NS	
Millar 1982 (borealis)	A	F	NB	-	19.2	0.9	SE g			103	NW Terr., CAN	near lake	
	A	F	L	-	24.4	0.4	SE g			42			Body weight during lactation represents an increase of 27% over nonbreeding body weight.
Millar 1982 (maniculatus)	A	F	NB	-	17.0	0.4	SE g			42	NW Terr., CAN	near lake	
	A	F	L	-	22-25	0.4	SE g			42			Mean weight increased from 21.9 to 25.4 g during the lactation (L) period.
Murie 1961 (sonoriensis)	A	B	-	-	20.8		g				37.3 N latitude	NS	As cited in MacMillen and Garland 1989.
Myers & Master 1983	A	F	BR	-	21		g				Michigan	NS	As cited in Millar 1989.
Sadleir 1970	A	M	-	SP	16.0		g				NS	NS	As cited in Montgomery 1989.
	A	F	-	SP	14.0		g						
Schlesinger & Potter 1974	A	B	-	-	19.6	0.71	SE g			24	New Hampshire	forest	

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
Stebbins 1978	A	M	-	SU	18.9		g			8	Alberta, CAN	captive; cage in woods	SU = Aug & Sept; FA = Oct, Nov, Dec; WI = Jan, Feb, Mar.
	A	F	-	SU	16.7		g			8			
	A	M	-	FA	21.9		g			8			
	A	F	-	FA	19.0		g			8			
	A	M	-	WI	25.2		g			8			
	A	F	-	WI	20.4		g			8			
Stebbins 1977	A	F	L	-	29.0		g			NS	NS	NS	Weeks 1-4 of lactation respectively (weeks after birth).
	A	F	L	-	29.0		g						
	A	F	L	-	29.0		g						
	A	F	L	-	23.9		g						
Svendsen 1964	A	F	BR	-	20		g			Kansas	NS	NS	As cited in Millar 1989.
Svhla 1932, 1935	A	F	BR	-	15		g			MI, ND, IA	NS	NS	As cited in Millar 1989.
Svhla 1932, 1934	A	F	-	-	21		g			Washington	NS	NS	As cited in Millar 1989.
Thomas 1971 (balaclavae)	A	F	-	-	24.3		g			NS	NS	NS	As cited in Millar 1982.
Thomas 1971 (carli)	A	F	-	-	28.1		g			NS	NS	NS	As cited in Millar 1982.
Wolff 1985b (nubiterrae)	A	F	-	-	17		g			52	Virginia	oak forest	As cited in Millar 1989.
BODY FAT													
Cronin & Bradley 1988	A	F	1	-	1.6		g			8	Virginia	lab	Nonbreeding: (1) reproductively proven; (2) reproductively inhibited.
	A	F	2	-	0.6		g			8			
	A	M	1	-	1.7		g			8			
	A	M	2	-	0.9		g			8			
Gyug & Millar 1980	A	M	-	SP	1.18	0.14 SE	g fat			19	NW Terr., CAN	pine/spruce forests	PB = pre-breeding; g = gestating; L = lactating; PL = post-lactating.
	A	M	-	SU	0.79	0.04 SE	g fat			72			Body weights not reported, only lean dry weights, which ranged from around 4.1 to 4.7 g depending on the group.
	A	F	PB	SP	1.22	0.20 SE	g fat			21			
	A	F	G	SP	0.84	0.07 SE	g fat			15			
	A	F	L	SU	0.73	0.04 SE	g fat			43			
	A	F	PL	SU	0.63	0.09 SE	g fat			13			
Morris & Kendeigh 1981	A	B	-	WI	2.2	0.2 SE	g			8	Illinois 1972	grassland	
	A	B	-	SU	1.9	0.31 SE	g			8			

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
LEAN (DRY) BODY WEIGHT													
Cronin & Bradley 1988	A	F	1	-	5.3		g			8	Virginia	lab	Nonbreeding: (1) reproductively proven; (2) reproductively inhibited.
	A	F	2	-	4.2		g			8			
	A	M	1	-	5.4		g			8			
	A	M	2	-	4.9		g			8			
Marinelli & Millar 1989	A	M	1	SU	6.0	0.12	SE g			17	Vancouver BC,	beach	(1) One island off Vancouver;
	A	M	2	SU	5.7	0.09	SE g			27	CAN 1986		(2) a second island off Vancouver;
	A	M	3	SU	5.2	0.07	SE g			48			(3) mainland Vancouver.
Morris & Kendeigh 1981	A	B	-	WI	4.5	0.58	SE g			8	Illinois 1972	grassland	
	A	B	-	SU	4.7	0.55	SE g			8			
Schlesinger & Potter 1974	A	B	-	-	5.4	0.21	SE g			24	New Hampshire	forest	
NEONATE WEIGHT													
Halfpenny 1980	N	B	-	-	1.8		g				Colorado	NS	As cited in Millar 1989.
Layne 1968 (artemesiae)	N	-	-	-				1.3	2.2		NS	NS	As cited in Eisenberg 1981.
Layne 1968 (bairdii)	N	-	-	-				1.1	2.3		NS	NS	As cited in Eisenberg 1981.
Layne 1968 (blandus)	N	-	-	-				1.5	2.1		NS	NS	As cited in Eisenberg 1981.
Layne 1968 (gambelii)	N	-	-	-	1.4						NS	NS	As cited in Eisenberg 1981.
Linzey 1970	N	-	-	-	1.8		g				Tennessee	Smoky Mountains	As cited in Millar 1989.
McCabe & Blanchard 1950	N	-	-	-	1.40		g				California	NS	As cited in Millar 1989.
Millar 1982	N	B	-	-	1.9	0.01	SE g			281	NW Terr., CAN 1978-79	lab lab	
Millar 1975	N	B	-	-	1.8		g			312	Ontario, CAN	lab	
Millar 1979	N	B	-	-	1.65	0.01	SE g			201	Manitoba, CAN	lab	
Millar 1989	N	B	-	-	1.8		g	1.6	2.8		US average	NS	
Millar 1989	N	B	-	-	1.7	0.02	SE g			165	Alberta, CAN	NS	

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
Myers & Master 1983	N	B	-	-	1.7		g			Michigan	NS		As cited in Millar 1989.
Myers et al. 1985	N	B	-	FA	1.53		g			55	Michigan 1976-80	field	Average fall temperatures experienced.
Myers et al. 1985	N	-	-	SP	1.64		g			63	Michigan	captive and wild	
	N	-	-	FA	1.53		g			55	1976-82		
Myers & Master 1983	N	-	-	-	1.7		g				Michigan	NS	As cited in Millar 1989.
Svendsen 1964	N	B	-	-	1.8		g				Kansas	NS	As cited in Millar 1989.
Svendsen 1964	N	-	-	-	1.8		g				Kansas	NS	As cited in Millar 1989.
Svhla 1932, 1935	N	B	-	-	1.6		g				MI, ND, IO	NS	As cited in Millar 1989.
Svhla 1932	N	-	-	-	1.7		g				CA, NM	NS	As cited in Millar 1989.
Svhla 1932	N	-	-	-	1.7		g				Washington	NS	As cited in Millar 1989.
Svhla 1932, 1934	N	-	-	-	1.67		g				MI, ND, IA	NS	As cited in Millar 1989.
Svhla 1932	N	-	-	-	1.67		g				Colorado, New Mexico	NS	As cited in Millar 1989.
GROWTH RATE													
Drickamer & Bernstein 1972 (nebrascensis)	P	-	-	-	0.34		g/day				NS	NS	As cited in Millar 1982.
Drickamer & Bernstein 1972 (labecula)	P	-	-	-	0.45		g/day				NS	NS	As cited in Millar 1982.
Linzey 1970 (nubiterrae)	P	-	-	-	0.35		g/day				NS	NS	As cited in Millar 1982.
McCabe & Blanchard 1950 (gambelii)	P	-	-	-	0.34		g/day				NS	NS	As cited in Millar 1982.
Millar 1982 (borealis)	P	-	-	-	0.36	0.01 SE	g/day			57	NW Terr., CAN 1978-79	lab	N = 57 litters.
Millar 1979 (borealis)	P	-	-	-	0.35		g/day				Manitoba, CAN	lab	

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes	
Millar et al. 1979 (<i>maniculatus</i>)	P	-	-	-	0.32		g/day			NS		NS	As cited in Millar 1982.	
Millar & Innes 1983 (<i>borealis</i>)	P	-	-	-	0.34		g/day			150	Alberta, CAN 1978-81	various alpine	Average nestling growth rate.	
Millar & Innes 1983 (<i>borealis</i>)	P	M	-	-	0.27	0.06	SE	g/day		31	Alberta, CAN	wild (not lab)	Growth rate of newly "emerged" pups.	
	P	F	-	-	0.22	0.05	SE	g/day		30				
	P	B	-	-	0.25	0.03	SE	g/day		61				
Millar and Innes 1983 (<i>borealis</i>)	J	-	-	-	0.2	0.05	SE	g/day			Alberta, CAN	lab	From weaning (approximately 3 weeks) to 40 days of age.	
Millar 1985 (<i>nebrascensis</i>)	P	B	-	-	0.38	0.01	SE	g/day	0.30	0.95	156	Alberta, CAN	NS	Growth rate varies with age.
Morrison et al. 1977 (<i>bairdii</i>)	P	-	-	-	0.35		g/day			NS		NS	As cited in Millar 1982.	
WEANING WEIGHT														
Halfpenny 1980	-	B	-	-	8.0		g				Colorado	NS	As cited in Millar 1989.	
King et al. 1963	-	B	-	-	9.5		g				Michigan	NS	As cited in Millar 1989.	
Millar 1979	-	B	-	-	9.26	0.10	SE	g		232	NW Terr., CAN 1978-79	lab		
Millar 1979	-	B	-	-	8.40	0.06	SE	g		201	Manitoba, CAN	lab		
Millar & Innes 1983 (<i>borealis</i>)	-	B	-	-	9.9	0.1	SE	g		151	Alberta, CAN 1978-81	various alpine		
Millar 1989	-	B	-	-	8.8		g	7.7	11.2		N American average	NS		
METABOLIC RATE (OXYGEN)														
Abbott 1974 (<i>coolegei</i>)	A	-	B	-	43.68		LO2/kg-day			28.9 N latitude		NS	As cited in MacMillen and Garland 1989.	
Brower & Cade 1966 (<i>gracilis</i>)	A	-	B	-	43.2		LO2/kg-day			44.4 N latitude		woodlands	Temp: 37.5 C; body wt 17.0 g. As cited in Deavers and Hudson 1981 and MacMillen and Garland 1989.	

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
Hayward 1965	A	-	B	-	45.6		LO2/kg-day			NS		NS	Temp: 36.3 C; body wt. 22.5 g. As cited in Deavers and Hudson 1981.
Hock & Roberts 1966	A	-	B	-	48.0		LO2/kg-day			NS		NS	Temp: 36.6 C; body wt. NS. As cited in Deavers and Hudson 1981.
MacMillen and Garland 1989 (various)	A	F	BA	-	50		LO2/kg-day	40	61	N American average		NS	Data from seven studies.
McNab & Morrison 1963 (<i>gambelii</i>)	A	-	B	-	48.96		LO2/kg-day			37.9 N latitude		arid and mesic	Temp: 36.8 C; body wt. 19.1 g. As cited in Deavers and Hudson 1981 and MacMillen and Garland 1989.
McNab & Morrison 1963 (<i>sonoriensis</i>)	A	-	B	-	40.08		LO2/kg-day			38.0 N latitude		NS	Temp: 36.3 C; body wt. 24.2 g. As cited in Deavers and Hudson 1981 and MacMillen and Garland 1989.
Morrison 1948	A	-	AD	-	74.4	2.2 SD	LO2/kg-day	53	101	3	NS	lab	(AD) ADMR = average daily metabolic rate. Three runs with two animals (average weight 19 g). Room temperature ranged between 15 and 25 C.
Murie 1961 (<i>sonoriensis</i>)	A	-	B	-	54.72		LO2/kg-day			37.3 N latitude		NS	Temp: 36.8 C; body wt. 20.8 g. As cited in Deavers and Hudson 1981 and MacMillen and Garland 1989.
Stebbins et al. 1980	A	M	AD	WI	138	5.3 SE	LO2/kg-day			4	Alberta, CAN	lab, poplar grove	(AD) = average daily metabolic rate; (R) = resting metabolism. Temperatures for winter averaged -17.7 C (-6 to -22 C); for spring averaged 14.5 C (8 to 22 C); for summer averaged 20.6 C (14 to 32 C).
	A	M	AD	SP	102	7.2 SE	LO2/kg-day			4			
	A	M	AD	SU	74.9	3.4 SE	LO2/kg-day			4			
	A	M	R	WI	112	2.9 SE	LO2/kg-day			4			
	A	M	R	SP	77.0	2.4 SE	LO2/kg-day			4			
	A	M	R	SU	63.8	1.9 SE	LO2/kg-day			4			
Tomasi 1985	A	B	R1	-	142	7.0 SE				6	Utah	lab	Resting (R) metabolism at different temperatures: (1) 10 deg C; (2) 18 deg C; (3) 26 deg C; (4) 30 deg C; and (5) 36 deg C.
	A	B	R2	-	103	6.5 SE				6			
	A	B	R3	-	63.6	4.3 SE				6			
	A	B	R4	-	58.8	4.3 SE				6			
	A	B	R5	-	78.0	8.4 SE				6			
Zegers & Merritt 1988	A	B	R	WI			LO2/kg-day	31	60	Pennsylvania 1984-85		mature beech-poplar forest	
	A	B	R	SU			LO2/kg-day	43	60				

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
METABOLIC RATE (KCAL BASIS)													
Morris & Kendeigh 1981 (bairdii)	A	B	FL	WI	790		kcal/kg-d				Illinois	lab	(FL) Free-living metabolism. Estimated from lab-derived model assuming no reproduction, molt, or weight change and assuming summer temps avg. 17.5 C above ground and 20.2 in burrows and winter temps avg. -3 C above ground and 10.7 in burrows.
	A	B	FL	SU	592		kcal/kg-d						
FOOD INGESTION RATE													
Cronin & Bradley 1988	A	F	NB	-	0.185		g/g-day				Virginia	lab	Animals were reproductively proven. Diet of lab chow.
	A	M	NB	-	0.218		g/g-day					lab	
Dice 1922 (bairdii)	A	M	1	-	0.536		cal/g-day	0.511	0.560	20	Illinois	lab	N = number of animal-days. Diet of wheat and peanut kernals. Conditions: (1) 21 deg C, dry air; (2) 32 to 34 deg C, dry air; and (3) 32 to 34 deg C, wet air.
	A	F	1	-	0.558		cal/g-day	0.480	0.699	59			
	A	B	2	-	0.348		cal/g-day	0.208	0.615	11			
	A	B	3	-	0.459		cal/g-day	0.427	0.502	7			
Dice 1922 (bairdii)	A	B	1	-	1.86		g wheat	1.35	2.93		Illinois	lab	Conditions: (1) 21 deg C, dry air; (2) 28 deg C, dry air. Diet consisted of wheat and peanuts (peanut intake restricted). Wheat was 10.6% water with 3.33 cal/gram. Peanuts were 9.2% water with 5.48 cal/gram. Weights of mice not reported, appears to be about 15 g.
	-	-	1	-	0.48		g peanuts						
	-	-	1	-	2.34		g total/d						
	A	B	2	-	1.45		g wheat	0.80	2.09				
	-	-	2	-	0.43		g peanuts						
	-	-	2	-	1.88		g total/d						
Dice 1922 (bairdii)	A	F	GL	-	3.12		g wheat				Illinois	lab	Conditions 21 deg C, dry air. Female gestating (G) and then lactating (L).
	-	-	-	-	0.50		g peanuts						
	-	-	-	-	3.62		g total/d						

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
Drickamer 1970 (bairdii)	A	B	-	SU	0.133		g/g-day			30	Michigan	1968	lab
Drickamer 1976	J	B	-	-	0.12		g/g-day			10	NS		lab
Green & Millar 1987	A	B	1	-	3.3	0.3 SE	g/day			19	Alberta, CAN		lab
	A	B	2	-	3.0	0.2 SE	g/day			18			
	A	B	3	-	3.7	0.9 SE	g/day			19			
Green & Millar 1987	A	B	1	-	0.15		g/g-day			19	Alberta, CAN		lab
	A	B	2	-	0.14		g/g-day			18			
	A	B	3	-	0.17		g/g-day			19			
Kantak 1983 (bairdii)	A	B	NB	-	0.07		g/g-day				Wisconsin		lab
Millar 1982 (borealis)	A	F	NB	-	0.15		g/g-day			40	northern		lab
	A	F	L	-	0.34		g/g-day			40	population,		
											Alberta, CAN		
Millar 1979 (maniculatus)	A	F	NB	-	0.19		g/g-day				Manitoba, CAN		lab
	A	F	L	-	0.45		g/g-day						
Millar 1985 (nebrascensis)	A	F	NB	-	0.17		g/g-day				NS		lab
Millar & Innes 1983 (borealis)	A	F	NB	-	0.180		g/g-day			40	montane		lab
	A	F	L	-	0.38		g/g-day			40	population,		
											Alberta, CAN		
Millar 1985 (nebrascensis)	A	F	L	-	0.33		g/g-day			33	Alberta, CAN		lab
													Diet of purina rat pellets (water content 3%; energy value 4.5 kcal/g dry weight).

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Millar 1985 (nebrascensis)	A	F	N	-	0.17		g/g-day			49	Alberta, CAN	lab	Mean daily food intake over 3-6 days is related to body weight as Y(intake in g/day) = 1.09 + 0.12 X(mean body weight in g). The mean body weight of the tested females was 20.1 +/- 0.6 g.
Nelson & Desjardins 1987	J	M	1	-	0.21	0.01 SE	g/g-day			18	parents from S Dakota	lab	Conditions: (1) provided with unlimited water supply; (2) water supply limited to 50% of consumption when provided with unlimited supply. Diet of lab chow with 8 to 10% water content.
WATER INGESTION RATE													
Dice 1922 (bairdii)	A	B	1	-	0.126		g/g-day	0.082	0.177	79	Illinois	lab	N = number of animal-days. Diet of wheat and peanut kernals. Conditions, all dry air: (1) 21 deg C; (2) 28 deg C; and (3) 32-34 deg C.
	A	B	2	-	0.146		g/g-day	0.132	0.168	35			
	A	B	3	-	0.192		g/g-day	0.123	0.287	11			
Dice 1922 (bairdii)	A	M	1	-	1.98		cc/day	1.24	2.72	20	Illinois	lab	N = number of animal-days. Diet of wheat and peanut kernals. Conditions: (1) 21 deg C, dry air; (2) 32 to 34 deg C, dry air; and (3) 32 to 34 deg C, wet air.
	A	F	1	-	1.66		cc/day	1.12	2.39	59			
	A	B	1	-	1.7		cc/day	1.12	2.72	79			
	A	F	G1	-	3.78		cc/day						
	A	F	L1	-	2.98		cc/day						
	A	B	2	-	2.31		cc/day	1.55	3.37	11			
	A	B	3	-	1.14		cc/day	1.07	1.23	7			
	A												
Nelson & Desjardins 1987	J	M	-	-	0.34	0.02 SE	g/g-day			80	parents from S Dakota	lab	Animals 50-70 days old; temperature = 20 +/- 2 deg C. Diet with 8 to 10% water content.
Ross 1930 (sonoriensis)	A	B	-	-	0.19			0.071	0.60	8	NS	lab	Diet of dry ground wheat, powdered milk, casein, etc. Moisture content probably < 10%. Temperature 21 to 24 deg C.
Ross 1930 (gambelii)	A	B	-	-	0.16			0.061	0.29	4	NS	lab	Diet of dry ground wheat, powdered milk, casein, etc. Moisture content probably < 10%. Temperature 21 to 24 deg C.

***** DIET *****

Reference	Age	Sex	Food type	Spring	Summer	Fall	Winter	N	Location	Habitat - Measure	Notes
Agnew et al. 1988	B	B	arthropods vegetation seeds	25.9 42.8 31.3	59.1 26.9 14.0	58.4 29.1 12.4			S Dakota 1981-82	prairie dog colony/ Badlands Nat. Park - % of total items; fecal pellets	Data in fall column collected in late summer. Hard to determine N; 64 traps set at three-week intervals and pellets collected from traps after id animal.
Agnew et al. 1988	B	B	arthropods vegetation seeds	52.2 36.5 10.7	31.8 34.1 43.5	32.0 29.4 15.1			S Dakota 1981-82	mixed-grass prairie/ Badlands Nat. Park - % of total items; fecal pellets	Data in fall column collected in late summer. Hard to determine N; 64 traps set at three-week intervals and pellets collected from traps after id animal.
Cook et al. 1982	B	B	Festuca arundinacea Dactylis glomerata Phleum pratense Tridens flavus Sertaria viridis Taraxacum officinale Lamium amplexicaule Bromus tectorum Sertaria faberi Capsella bursa-pasto Trifolium stolonifer arthropod animal material miscellaneous (sample size)	0 1.5 2.5 2.5 2.0 6.0 9.0 0 2.0 4.0 4.0 11.5 2.0 0 (6)	0.7 2.2 4.2 1.0 0.7 4.9 1.4 0 0.0 1.7 0.7 22.2 5.4 0.8 (11)	6.2 1.0 7.5 1.2 0.5 8.0 0 5.5 0.6 3.5 0 0 0 (3)	1.8 4.7 1.7 3.1 0.0 9.2 8.9 2.1 3.6 5.6 2.6 0.4 1.0 3.9 (7)		sw Missouri 1975-76	old succession field - mean no. items per stomach	The mice ate seeds of the Festuca, Phleum, Setaria, and Bromus.
Cook et al. 1982	B	B	Festuca arundinacea Dactylis glomerata Phleum pratense Tridens flavus Sertaria viridis Taraxacum officinale Lamium amplexicaule Bromus tectorum Sertaria faberi Capsella bursa-pasto Trifolium stolonifer arthropod animal material miscellaneous	2.0 2.4 3.3 1.7 0.4 7.7 6.5 1.8 1.6 4.6 1.9 8.2 1.9 1.1				sw Missouri 1975-76	old succession field - mean no. items per stomach	Average across the entire year in spring column. The mice ate seeds of the Festuca, Phleum, Setaria, and Bromus.	

Reference	Age	Sex	Food type	Spring	Summer	Fall	Winter	N	Location	Habitat - Measure	Notes
Flake 1973	B	B	coleopterans grasshoppers leafhoppers lepidopterans spiders seeds forbs grasses and sedges shrubs (sample size)	14.6 6.4 13.3 21.7 2.6 22.5 4.7 4.0 3.8 (108)	23.8 4.2 1.8 12.7 2.7 25.9 10.0 2.6 1.4 (215)	9.4 6.4 1.9 1.5 2.5 56.8 5.6 2.8 0.8 (236)	4.9 2.5 2.5 1.8 0.3 65.4 4.3 4.8 2.6 (97)	565 1969-70	Colorado prairie -	short/mixed grass prairie -	Spring = Mar - Apr.; summer = May - Aug; fall = Sept - Dec; winter = Jan - Feb.
Hamilton 1941	A	B	insects seeds, other starch greens small mammals snails birds annelids fruit fungi	71.4 20.8 0 4.3 1.2 3.7 0 52.3 3.7		72.8 43.9 20.5 4.4 3.9 1.7 1.7 0 0	180 e US, mostly NY	habitat NS - % occurrence; stomach contents	Beechnuts, acorns, and ripening seeds of all sorts are stored for winter use.		
Harris 1986	B	B	arthropods vegetation seeds (sample size)	81 19 0 (40)	84 0 16 (31)	72 3 25 (24)		95 California	semi-stabilized dune - % relative frequency in fecal samples	Elevation 2,000 meters.	
Martell & MacAuley 1981	B	B	nuts and seeds arthropods fruit fungi green plants Achlrophylion plant	22.9 47.2 16.6 9.3 1.7 2.6			712 Ontario, CAN	habitat NS - % diet; measure NS	As cited in Wolff et al. 1985.		
Sieg et al. 1986	B	B	arthropods seeds grasses forbs shrubs algae fungi	63.6 21.8 1.4 7.6 2.3 1.3 2.3			192 Montana 1979-80	betonite mine spoils & sagebrush grass lands; - % relative density in scats	Two years averaged.		
Vaughn 1974	A	B	seeds arthropods cut worms flowers leaves fungus fruit	58.8 17.4 11.3 2.8 5.1 2.7 0.5			242 Colorado 1965-66	habitat NS - % frequency of occurrence; stomach contents	Data from 1965 and 1966 averaged together.		

Reference	Age	Sex	Food type	Spring	Summer	Fall	Winter	N	Location	Habitat - Measure	Notes
Whitaker 1966	-	-	Setaria seeds	2.1	2.7	0.6	1.4	444	Indiana 1962-65	several habitats -	
			lepidopterous larvae	20.6	34.5	16.7	4.8			% volume; stomach contents	
			corn	4.1	4.2	3.2	8.7				
			misc. vegetation	15.8	3.1	8.0	13.4				
			wheat seeds	6.5	1.6	3.2	23.7				
			Digitaria seeds	0	2.6	0.7	0.6				
			Ambrosia	0	0	2.2	0.6				
			coleopterous larvae	1.8	.7	1.6	1.0				
			unidentified seeds	5.4	5	8.8	8.3				
			Endogone	TR	0	0.8	0				
			green vegetation	7.6	0	4.3	3.7				
			Echinochloa seeds	0	1.2	6.4	0				
			Coleoptera	3.9	5.3	5.1	1.4				
			soybeans	13.4	3.1	6.9	10.7				
			Hemiptera	1.3	2.7	4.2	0.9				
			earthworms	2.9	0	0	1.7				
			Prunus	0.2	1.2	0.7	0				
			Elymus seeds	0.3	0	0	0				
			Chilopoda	2.1	0	2.0	0.3				
			spider	0.7	1.8	0.3	0				
Whitaker 1966	-	-	Setaria seeds	0.7				67	Indiana	cultivated field -	Year-round diet.
			lepidopterous larvae	14.9						% volume; stomach contents	
			corn	1.6							
			misc. vegetation	9.4							
			wheat seeds	1.5							
			Digitaria seeds	0							
			coleopterous larvae	0.7							
			unidentified seeds	9.0							
			Endogone	0							
			green vegetation	12.5							
			sorghum halepense se	0							
			Coleoptera	1.2							
			cultivated sorghum s	6.0							
			soybeans	0							
			Lespedeza seeds	11.9							
			flesh	0.7							
			Hemiptera	4.6							
			earthworms	2.1							
Whitaker 1966 (bairdii)	B	B	nuts and seeds	39				113	Indiana	habitat NS -	As summarized by Wolff et al. 1985.
			arthropods	26						% volume; stomach	
			green plants	20						contents	
			other	8.4							
			unspecified	6.6							

Reference	Age	Sex	Food type	Spring	Summer	Fall	Winter	N	Location	Habitat - Measure	Notes
Wolff et al. 1985 (nubiterrae)	A	B	nuts/seeds		0	24	23		Virginia	oak, maple, hickory forest	
			arthropods		56	30	46			-	
			lepidopteran larvae	3.8	0.2	1.5				% frequency of occurrence;	
			lepidopteran adults	3.4	26	6.7				stomach contents	
			green vegetation	4.7	12	18					
			fungus	7.2	0.3	1.0					
			fruit	25	3.5	1.1					
			unknown	0.8	4.1	3.0					
			(sample size)	(40)	(20)	(10)					
van Horne 1982	J	B	hard-body arthropods	6				53	Alaska 1977-79	spruce/hemlock forest	Measure = percentage cover of each fragment type in slides of stomach contents. Should approximate percent volume in diet.
			soft-body arthropods	12						-	
			vegetation	5						index of % volume;	
			fruits & seeds	53						stomach contents	
			flowers	14							
			hemlock spores	5							
			fungus	1							
van Horne 1982	A	B	hard-body arthropods	17				129	Alaska 1977-79	spruce/hemlock forest	Measure = percentage cover of each fragment type in slides of stomach contents. Should approximate percent volume in diet.
			soft-body arthropods	9						-	
			vegetation	6						index of % volume;	
			fruits & seeds	52						stomach contents	
			flowers	7							
			hemlock spores	4							
			fungus	1							

***** POPULATION DYNAMICS *****

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
HOME RANGE SIZE													
Blair 1940	A	M	-	SU	0.94		ha				Michigan	woodlands	As cited in Bowers and Smith 1979.
	A	F	-	SU	0.54		ha					heterogenous	
Blair 1940	A	M	-	SU	0.25		ha				Michigan	homogenous grassland	As cited in Bowers and Smith 1979.
	A	F	-	SU	0.24		ha						
Bowers & Smith 1979	A	M	1	SU	0.0998	0.0063	SE ha			30	UT, ID, OR	see notes	Habitat: (1) ponderosa pine in Oregon; (2) artemisia-sarcobatus desert in Idaho; (3) atriplex-eurotia desert in Utah.
	A	F	1	SU	0.075	0.0063	SE ha	25	1977				
	A	M	2	SU	0.128	0.012	SE ha	12					
	A	F	2	SU	0.094	0.0013	SE ha	10					
	A	M	3	SU	0.123	0.014	SE ha	8					
	A	F	3	SU	0.119	0.006	SE ha	8					

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
Bowers & Smith 1979	A	M	-	SU			ha	0.02	0.21	50	Utah, Oregon, Idaho	all habitats combined	Mark recapture 2x per day over a 7-day period. Home ranges estimated for individuals captured more than 4 times using Calhoun and Casby method.
	A	F	-	SU			ha	0.01	0.18	43			
Cranford 1984	A	M	-	WI	0.0189	0.0065	SD ha			14	Utah 1974-76	subalpine meadow	Snowbound; calculated using boundary strip method.
	A	F	-	WI	0.0137	0.0050	SD ha			9			
	J	-	-	WI	0.0252	0.0135	SD ha			8			
Cranford 1984	A	M	-	SU	0.0390	0.0054	SD ha			21	Utah 1974-76	subalpine meadow	Snow free.
	A	F	-	SU	0.0265	0.0047	SD ha			22			
	J	-	-	SU	0.0446	0.0095	SD ha			16			
Cranford 1984	A	M	-	SP	0.0276	0.0082	SD ha			23	Utah 1974-76	subalpine meadow	Snowbound - calculated by boundary strip method.
	A	F	-	SP	0.0246	0.0035	SD ha			18			
	J	-	-	SP	0.0075	0.0064	SD ha			3			
Metzgar 1973a,b	-	-	-	-			ha			0.30		NS	As cited in Wolff 1989.
Wolff et al. 1983	A	M	-	SU	0.0421		ha			4	Virginia 1981	mature oak maple forest	Minimum home range based on recapture in grid of traps; spring and summer.
	A	F	-	SU	0.0332		ha			6			
Wolff 1985a (nubiterrae)	B	B	-	-	0.0596	0.0040	SE ha	0.0537	0.0678	76	Virginia 1981-83	mixed deciduous forest	Combined across control plots and low and high density experimental plots.
	B	M	-	-	0.0583	0.0061	SE ha	0.0535	0.0645	39			
	B	F	-	-	0.0611	0.0053	SE ha	0.0539	0.0715	37			
	J	B	-	-	0.0610	0.0062	SE ha	0.0588	0.0655	27			
Wolff 1985a (nubiterrae)	B	M	1	-	0.0515	0.0072	SE ha			25	sw Virginia 1981-83	oak, maple, hickory forest	Control plots. Estimated by trapping year-round except winter.
	B	F	1	-	0.0534	0.0060	SE ha			23			
	J	B	1	-	0.0514	0.0060	SE ha			13			
	B	B	1	-	0.0560	0.0033	SE ha			61			
POPULATION DENSITY													
Brown & Zeng 1989	B	B	1	-	0.28		N/ha			74	Arizona 1977-85	desert	(1) All study plots; (2) mean value for two control plots surveyed year round.
	B	B	2	-	0.19		N/ha						
Cranford 1984	B	B	-	SP			N/ha	2.2	14.5		Utah 1974-76	subalpine meadow with clumps of fir and spruce	Determined by minimum number known alive.
	B	B	-	SU			N/ha	12.8	22.4				
	B	B	-	WI			N/ha	3.4	8.4				
Halford 1987	B	B	-	-	10.2		N/ha			57	Idaho	dry pond basin	Near radioactive waste disposal site.

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
Metzgar 1980	A A	B B	1 2	- -	5-6 20		N/ha N/ha				w Montana	mixed conifer, cottonwood river, bottom forest	Season: (1) Through July 2; (2) August.
Metzgar 1979	B	B	-	-	12	6.7	SD N/ha	3.9	28	16	Montana	thick understory near river	N = 16 months sampled over a three-year period.
Sullivan 1979	A	B	-	-			N/ha	12.7	45.5	4	Brit. Col., CAN 1977-78	burnt slash	Seasons = July through October and March through April. Minimum number alive on the plot.
Vaughn 1974	A	B	-	SU	2.8		N/ha				Colorado 1965-67	subalpine meadow	
Wolff 1985a (two)	B B	B B	1 2	FA FA	33.2 13.6	4.32 1.11	SE N/ha SE N/ha		6 6	57 57	Virginia 1981-83	mixed deciduous forest	Data are for joint densities of <i>P.</i> <i>leucopus</i> and <i>P. maniculatus</i> : (1) from April-Nov. 1981; (2) from April-Nov. 1982-83.
Wolff & Durr 1986	A J A J	B B B B	-	FA FA SP SP	15 4 14 4		N/ha N/ha N/ha N/ha				sw Virginia	mountain forest	
van Horne 1982	A J A J A J A J	B B B B B B B B	1 1 2 2 3 3 4 4	- - - - - - - -	21 19 27 15 49 12 16 20		N/ha N/ha N/ha N/ha N/ha N/ha N/ha N/ha	6 6 15 7 32 10 9 10	33 47 41 24 58 13 23 43		Alaska 1977-79	forest spruce/hemlock	Estimated densities in 4 seral stages of spruce/hemlock forest following clearcut: (1) 2 years later; (3) 7 years later; (3) 23 years later; (4) never clear-cut. Minimum and maximum values are from one of the three study years that were averaged to get the mean value. Category 3 considered most favorable on basis of overwintering survival.
LITTER SIZE													
Blair 1958	-	-	-	-	5.0					31	Texas	NS	As cited in Millar 1989.
Drickamer & Bernstein 1972	-	-	-	-	3.7						Nebraska	North Platte Valley	As cited in Millar 1989.
Glazier 1979	-	-	-	-	4.3					10	Maine	Bar Harbor area	As cited in Millar 1989.
Halfpenny 1980	-	-	-	-	6.4					7	Colorado	NS	As cited in Millar 1989.
Linzey 1970	-	-	-	-	4.1						Tennessee	Smoky Mountains	As cited in Millar 1989.

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
May 1979; Gyug 1979	-	-	-	-	1.8					NW Terr., CAN	NS		As cited in Millar 1989.
McLaren & Kirkland 1979	-	-	-	-	4.3					195 Pennsylvania	NS		As cited in Millar 1989.
Meyers et al. 1985	-	-	1	SP	5.4					52 Michigan	NS		Temperature: (1) warmer than normal; (2) normal.
	-	-	2	SP	5.0					150 1976-82			
	-	-	1	FA	4.9					29			
	A	-	2	FA	5.6					98			
Meyers et al. 1985	-	-	-	SP	5.0			4.9	5.5	150 Michigan	captive and wild		
	-	-	-	FA	5.6	0.18	SE	5.3	6.3	98 1976-82			
Millar 1982	-	-	-	-	5.0			1	9	98 NW Terr., CAN	lab		
										1978-79	lab		
Millar & Innes 1983 (borealis)	-	-	-	-	5.3	0.1	SE			102 Alberta, CAN	various alpine		
Millar 1989	-	-	-	-	4.4			3.0	6.4	N America	NS		Minimum average and maximum average of 23 populations in North America.
Millar 1985 (nebrascensis)	-	-	-	-	5.1	0.14	SE		1	8 104 Alberta, CAN	NS		Minimum average and maximum average of 7 years of data.
Millar 1982	-	-	-	-	5.0					NW Terr., CAN	NS		
Morrison et al. 1977	-	-	-	-	4.4					midwest US	NS		As cited in Millar 1989.
Myers & Master 1983	-	-	-	-	6.0					Michigan	NS		As cited in Millar 1989.
Rood 1966	-	-	-	-	4.7					n Michigan	NS		As cited in Millar 1989.
Svendsen 1964	-	-	-	-	3.8					Kansas	NS		As cited in Millar 1989.
Svhla 1932	-	-	-	-	4.3					California, New Mexico	NS		As cited in Millar 1989.
Svhla 1932	-	-	-	-	4.5					Washington	NS		As cited in Millar 1989.
Svhla 1932, 1934	-	-	-	-	3.0			21	MI, ND, IA	NS			As cited in Millar 1989.
Wolff 1985b (nubiterrae)	-	-	-	-	3.4			52	Virginia	NS			As cited in Millar 1989.

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
LITTERS/YEAR													
Layne 1968 (several)	-	-	-	-	2 - 4					NS	NS		For subspecies artemesiae, bairdii, blandus, gambelii. As cited in Eisenberg 1981.
McCabe & Blanchard 1950	-	-	-	-	4.0		/year			California	NS		As cited in Millar 1989.
Millar & Innes 1983 (borealis)	-	-	-	-	1.9	0.1 SE	/year			38	Alberta, CAN	various alpine	
Millar 1989	-	-	-	-	2.4		/year				N American average	NS	Average of 10 populations from Costa Rica to Canada.
Wolff 1985b (nubiterrae)	-	-	-	-	1.8		/year				Virginia	NS	As cited in Millar 1989.
DAYS GESTATION													
Layne 1968 (artemesiae)	-	-	-	-				22	26		NS	NS	As cited in Eisenberg 1981
Layne 1968 (bairdii)	-	-	-	-	25						NS	NS	As cited in Eisenberg 1981
Layne 1968 (blandus)	-	-	-	-				22	25		NS	NS	As cited in Eisenberg 1981
Layne 1968 (gambelii)	-	-	-	-	23.5						NS	NS	As cited in Eisenberg 1981
Millar 1982 (borealis)	-	-	-	-	26.3	0.8 SE	days			23	31	NW Terr., CAN 1978-79	lab lab
Millar 1989	-	-	L	-	26.9		days					US average	NS
	-	-	NL	-	23.6		days						(NL) Not lactating; (L) lactating.
Millar 1985 (nebrascensis)	-	-	NL	-	25.5	0.3 SE	days			23	26	Alberta, CAN	lab
	-	-	L	-	29.5	1.4 SE	days			24	35	8	
Millar 1989	-	-	NL	-			days	22.4	25.5		NS	NS	Range in average gestation period for different populations, presumably in North America.
	-	-	L	-			days	24.1	30.6				
Myers & Master 1983	-	-	NL	-	23		days				Michigan	NS	As cited in Millar 1989.
	-	-	L	-	27		days						

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
Svendsen 1964	-	-	NL	-	22.4	0.1	SE days	22	23	Kansas	NS		As cited in Millar 1989.
	-	-	L	-	24.1	0.3	SE days	22	27				
Svhla 1932	-	-	NL	-	23.5	0.1	SE days	23	24	Canada	NS		As cited in Millar 1989.
	-	-	L	-	26.6	0.7	SE days	23	32				
Svhla 1932	-	-	NL	-	23.6	0.2	SE days	22	27	ne Utah	NS		As cited in Millar 1989.
	-	-	L	-	27.0	0.4	SE days	22	35				
AGE AT WEANING													
Halfpenny 1980	-	B	-	-	17.5		days			Colorado	NS		As cited in Millar 1989.
King et al. 1963	-	B	-	-	21.0		days			Michigan	NS		As cited in Millar 1989.
Millar 1982	-	B	-	-	21.4		days			NW Terr., CAN 1978-79	lab lab		
Millar et al. 1979 (maniculatus)	-	B	-	-	22.2		days			63	NS	lab	As cited in Millar 1979.
Millar & Innes 1983 (borealis)	-	B	-	-	24.9		days			Alberta, CAN 1978-81		various alpine	
Millar 1989	-	B	-	-	20.2		days	16	25	N American average	NS		
AGE AT SEXUAL MATURITY													
Millar 1985 (nebrascensis)	-	M	-	-	35		days			Alberta, CAN	lab		
Millar 1985 (nebrascensis)	-	F	-	-	60		days			Alberta, CAN	lab		
ANNUAL MORTALITY													
Fairbairn 1977	B	M	-	-	19		%/2 wks			Vancouver, CAN	2nd-growth coastal rain forest		2-week mortality rate averaged over the year. Mortality was highest (about 30 to 35%) during spring as males dispersed and females began to breed.
	B	F	-	-	18		%/2 wks						

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
Millar & Innes 1983 (borealis)	A	M	-	WI	33		%/winter			8	Alberta, CAN	various alpine	Small sample size for adults.
	A	F	-	WI	100		%/winter			6			
	J	M	-	WI	70		%/winter			30			
	J	F	-	WI	56		%/winter			34			
	A	B	-	SU	20		%/two wks			877			
	J	B	-	SU	19		%/two wks			639			

LONGEVITY

Brown & Zeng 1989	-	-	-	-	years		1.6	Arizona	desert				
Eisenberg 1981	-	-	-	-	years		1.3		zoo (captive)		Unpublished data from M. Jones.		
Millar & Innes 1983 (borealis)	B	B	-	-	<1	year			Alberta, CAN	various alpine			

*** SEASONAL ACTIVITIES ***

Reference	Begin	Peak	End		Location	Habitat	Notes
MATING							
Blair 1958	Nov		Apr		Williamson Co, Texas	NS	Breeding season 23 weeks long. As cited in Millar 1989.
Drickamer 1978	Apr		Aug		nw Massachusetts	NS	Breeding season 19 weeks long. As cited in Millar 1989.
Dunmire 1960	May		Aug		California	NS	Breeding season 11 to 16 weeks long. As cited in Millar 1989.
Howard 1949	Mar		Nov		Michigan	NS	Breeding season 33 weeks long. As cited in Millar 1989.
Metzgar 1979	May	May-June	Nov		Montana 1970-72	grassland	
Wolff 1985b (nubiterrae)	Mar		Oct		Giles Co, Virginia	NS	Breeding season 29 weeks long. As cited in Millar 1989.
TORPOR							
Tannebaum & Pivorun 1989		winter			northern range	NS	
DISPERSAL							
Fairbairn 1977		spring			Vancouver, CAN	2nd growth coastal rain forest	Males dispersed; females did not.

***** PRAIRIE VOLE *****

*** NORMALIZING AND CONTACT RATE FACTORS ***

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
BODY WEIGHT													
Abramsky & Tracy 1980	-	B	1	-	41.6		g			150A	ne Colorado	short-grass prairie	(1) Average weight over all seasons. Sample size: A = approximate number of individuals.
	-	B	-	SU	41.9		g			148			
	-	B	-	FA	44.2		g			150			
	-	B	-	WI	39.0		g			150A			
	-	B	-	SP	41.3		g						
Dupre 1983	A	B	-	-	46.2	1.5	SE	g		10	Kansas	lab	Drinking water provided ad libitum (animals fed dry food).
Dupre 1983	A	B	-	-	35.4	1.8	SE	g		10	Kansas	lab	Kept on minimum water regimen.
Martin 1956	-	B	-	-	43.78		g		25	73	ne Kansas 1950-52	grasslands	Females averaged slightly heavier than males, possibly in part due to pregnancy.
Myers & Krebs 1971	-	M	1	-	32.9	0.45	SE	g			s Indiana 1967-69	grasslands	Mean weights of resident voles in: (1) study grid F; (2) study grid I; (3) Carlson study area. Data pooled over complete study (all seasons). 2 SE given by authors divided by 2 to give SE shown here.
	-	F	1	-	31.1	0.35	SE	g					
	-	M	2	-	34.2	0.75	SE	g					
	-	F	2	-	32.7	0.45	SE	g					
	-	M	3	-	31.3	0.35	SE	g					
	-	F	3	-	33.3	0.30	SE	g					
Wunder et al. 1977	-	-	1	WI	41.0	5.6	SD	g		8	NS	lab	Voles acclimated in lab to temperature (degrees C) of: (1) 5; (2) 30. As cited in Wunder 1985.
	-	-	2	WI	48.4	8.9	SD	g		10			
	-	-	1	SU	50.0	4.7	SD	g		11			
	-	-	2	SU	48.5	8.7	SD	g		10			
BODY FAT													
Fleherty et al. 1973	-	-	-	-		%	dry wt		14.59	16.08	Kansas 1969-70	NS	
NEONATE WEIGHT													
Fitch 1957	-	-	-	-	2.9	0.1	SD	g			NS	NS	As cited in Nadeau 1985.
Kruckenberg et al. 1973	-	-	-	-	3.1		g				NS	NS	As cited in Nadeau 1985.
Martin 1956	-	-	-	-	2.8	0.4	SD	g		16	ne Kansas 1950-52	grassland	

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
Richmond & Conaway 1969	-	-	-	-	2.8		g			NS		NS	As cited in Nadeau 1985
GROWTH RATE													
Fitch 1957	-	-	-	-	0.61		g/day			NS		lab	As cited in Wunder 1985; to 20 days.
Kruckenberg et al. 1973	-	-	-	-	0.73		g/day			NS		lab	As cited in Wunder 1985; to 20 days.
Martin 1956	-	-	1	-	0.6		g/day				ne Kansas 1950-52	grassland	Age: (1) 1 to 10 days; (2) 11 days to 1 month; (3) one month until growth ceases - growth is highly variable at this stage.
-	-	2	-		1.0		g/day						
-	-	3	-		0.5		g/day						
Richmond & Conaway 1969	-	-	-	-	0.81		g/day			NS		lab	As cited in Wunder 1985; to 20 days.
METABOLIC RATE (OXYGEN)													
Bradley 1976	A	-	BA	-	28.3		102/kg-d			1	New York	lab	Body weight of vole = 54 g. As cited in Wunder 1985.
Wunder et al. 1977	-	-	1	WI	51.8	8.2 SD	102/kg-d			15	NS	lab	Measured at 27.5 degrees C; animals tested fresh from the field captured in (1) winter and (2) summer. Average body weights: (1) 38.5 g; (2) 47.4 g. As cited in Wunder 1985. (Probably resting metabolism; other conditions not specified.)
-	-	2	SU		41.8	4.8 SD	102/kg-d			9			
Wunder et al. 1977	-	-	1	WI	65.3	9.6 SD	102/kg-d			8	NS	lab	Measured at 27.5 degrees C. Voles acclimated in lab during specified season to temperature (degrees C) of: (1) 5; (2) 30. Average body weights of voles: winter/5 degrees = 41.0 g; winter/30 degrees = 48.4 g; summer/5 degrees = 50.0 g; summer/30 degrees = 48.5 g. As cited in Wunder 1985. (Probably resting metabolism; other conditions not specified.)
-	-	2	WI		52.6	6.0 SD	102/kg-d			10			
-	-	1	SU		42.2	9.5 SD	102/kg-d			11			
-	-	2	SU		33.6	3.6 SD	102/kg-d			10			

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
METABOLIC RATE (KCAL BASIS)													
Bradley 1976	A	-	-	WI	21.52		kcal/day			NS		NS	Do not know how determined, or if based on freelifing or captive individuals. As cited in Stalling 1990.
	A	F	BR	SU	20.13		kcal/day						
	A	F	NB	SU	8.22		kcal/day						
FOOD INGESTION RATE													
Dice 1922	A	B	1	-	3.31		g oats	2.08	4.80		Illinois	lab	Consumption of oats and dry grass in the lab in dry air at (1) 21 degrees C and (2) 28 degrees C. Body weight of animals ranged from 31 to 34 grams.
	A	B	1	-	0.94		g grass	-	-				
	A	B	1	-	4.25		g total	-	-				
	A	B	2	-	2.35		g oats	1.94	2.68				
	A	B	2	-	0.83		g grass	-	-				
	A	B	2	-	3.18		g total	-	-				
Dice 1922	A	M	1	-	0.561		cal/g-d	0.530	0.592		Illinois	lab	Diet of rolled oats and dried bluegrass for prairie voles maintained at (1) 21 degrees C in dry air; (2) 32 to 34 degrees C in dry air; (3) 32 to 34 degrees C in wet air.
	A	F	1	-	0.476		cal/g-d	0.424	0.622				
	A	B	2	-	0.195		cal/g-d	0.160	0.223				
	A	B	3	-	0.284		cal/g-d	0.214	0.509				
Dice 1922	A	B	1	-	0.13-0.14		g/g-day				Illinois	lab	Calculated from food ingestion rates of (1) 4.25 grams (oats and dry grass) at 21 degrees C; and (2) 3.18 grams (oats and dry grass) at 28 degrees C; assuming 31 to 34 gram body weight. Note that the variation in oat intake has not been accounted for.
	A	B	2	-	0.14-0.09								
WATER INGESTION RATE													
Chew 1951	A	B	1	-	0.37		g/g-day			5	NS	lab	Measured water drunk from water bottles. Diet consisted of rolled oats with sunflower seeds. Lab conditions: (1) 28 degrees C, 51 relative humidity (RH); (2) 33 degrees C, 45 RH. High temperature group incurred fatalities.
	A	B	2	-	0.43					5			
Dice 1922	A	B	1	-	0.211		g/g-day	0.152	0.255	71	Illinois	lab	Sample size (N) = number of test days for test condition: (1) 21 degrees C in dry air; (2) 28 degrees C in very dry air; (3) 28 degrees C in dry air; and (4) 32 to 34 degrees C in dry air.
	A	B	2	-	0.190		g/g-day	0.125	0.292	11			
	A	B	3	-	0.158		g/g-day	0.096	0.210	31			
	A	B	4	-	0.132		g/g-day	0.130	0.132	9			

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
Dupre 1983	A	B	-	-	0.286	0.02	SE g/g-day			10	Kansas	lab	Drinking water provided ad libitum (animals fed dry food).
Dupre 1983	A	B	-	-	0.162	0.015	SE g/g-day			10	Kansas	lab	Minimum drinking water required to maintain steady body weight (animals fed dry food).
*** DIET ***													
Reference	Age	Sex	Food type		Spring		Summer	Fall	Winter	N	Location	Habitat - Measure	Notes
Agnew et al. 1988	A	B	arthropods		0		1.6			40	wc South Dakota 1981	mixed grass prairie	
			vegetation		100		98.4					-	
												% dry weight; fecal pellets	
Agnew et al. 1988	A	B	arthropods		17		19.8	44.3		40	wc South Dakota 1982	mixed grass prairie	"Fall" column indicates values for late summer.
			vegetation		83		80.2	55.7		40		-	
												% dry weight; fecal pellets	
Cook et al. 1982	B	B	<i>Festuca arundinacea</i>		20.5		25.0	10.6	28.9		Missouri 1975-76	old field	Average of 10 months of data:
			<i>Dactylis glomerata</i>		6.7		1.7	1.1	4.2			-	Spring = March, April, May; Summer = June, July, Aug.; Fall = Sept. and Oct.; Winter = Jan. and Feb.
			<i>Phleum pratense</i>		8.3		2.0	2.1	5.3			mean number of food items; stomach contents	Plant parts consumed: leaf, stem, and seeds of <i>Festuca</i> and <i>Bromus</i> ; leaf and stem of <i>Tridens</i> and <i>Setaria faberii</i> ; leaf and seeds of <i>Dactylis</i> and <i>Setaria viridis</i> ; and leaves only of all other plant species.
			<i>Tridens flavus</i>		17.1		11.1	1.9	11.0				
			<i>Setaria viridis</i>		6.7		6.2	1.7	6.2				
			<i>Taraxacum officinale</i>		5.8		4.8	3.9	1.5				
			<i>Lamium amplexicaule</i>		3.9		2.9	5.2	3.4				
			<i>Bromus tectorum</i>		2.8		4.7	2.5	4.8				
			<i>Setaria faberii</i>		5.6		3.9	0.7	21.0				
			<i>Capsella bursa-past.</i>		2.7		1.2	0.5	0.6				
			<i>Trifolium stolonif.</i>		2.4		0.8	0.5	1.4				
			arthropod		0.2		0.3	0.0	0.1				
			animal material		0.0		0.2	0.2	0.0				
			other		3.9		1.4	1.5	0.9				
			(sample size)		(14)		(39)	(10)	(10)				
Flehardt & Olson 1969 (haydenii)	B	B	<i>Sporobolus asper</i>		19.54					97	Kansas 1966	forb and grass field	Data for June and July and for two areas were averaged. Items less than 2% of volume were combined as "other".
			<i>Kochia scoparia</i>		22.51							-	
			<i>Bouteloua gracilis</i>		6.50							% volume; stomach contents	
			<i>Bromus japonicus</i>		8.50								
			<i>Rumex crispus</i>		9.20								
			<i>Triticum aestivum</i>		3.43								
			<i>Carex sp.</i>		2.01								
			other (grass)		28.31								
			(forbs)		(53.5)								
					(46.5)								

Reference	Age Sex	Food type	Spring	Summer	Fall	Winter	N	Location	Habitat - Measure	Notes
Zimmerman 1965		Poa compressa	15.8				47	Indiana 1964-65	mixed	
		unidentified roots	10.0						-	
		Trifolium pratense	9.7						% volume; stomach	
		Hespedeza sp.	6.7						contents	
		Setaria faberii								
		seed	1.4							
		misc. vegetation	13.1							
		Panicum capillare	6.4							
		Trifolium pratense								
		roots	5.2							
		Erigeron sp.	5.0							
		Microtus flesh	1.0							
		Plantago lanceolata	4.6							
		Festuca elatior	4							
		Medicago sativa	3.6							
		unidentified seeds	2.2							
		Lepidopteran larvae	1.9							
		Chenopodium sp.	1.8							
		Oxalis sp.	1.5							
		unidentified insects	1.4							
		misc. Coleoptera	1.4							
		Rumex crispus	1.1							
		other	2.6							

*** POPULATION DYNAMICS ***

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
HOME RANGE SIZE													
Abramsky & Tracy 1980	A M	1	-		0.015		ha			9-16	ne Colorado	short-grass prairie	(1,2) Two replicate studies. Number of recaptures per animal not recorded. Home range calculated on the basis of the reported range length (RL) assuming a circular home range with a diameter of RL.
	A M	2	-		0.011		ha	12-18					
	A F	1	-		0.015		ha	3-22					
	A F	2	-		0.0073		ha	5-30					
Harvey & Barbour 1965	- M	-	-		0.045		ha	0.020	0.073	5	Kentucky 1963	pasture	Radioisotope tagged individuals; modified minimum area method. Authors note that these values are about 50% of values determined using the minimum area method on the same data, and feel that their modified method is more accurate.
	- F	-	-		0.0081		ha			1			
Jike et al. 1988	A	-	-	-	0.0984	0.0116	SE ha			30	Illinois 1985-86	bluegrass	3 days of radiotracking; size estimated using convex polygon method.

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
Martin 1956	A	M	-	-	0.0567		ha	0.0081	0.146		ne Kansas 1951-52	grassland	Method: inclusive boundary strip. Data pooled for all seasons.
	A	F	-	-	0.0486		ha	0.0081	0.166				
	J	-	-	-	0.0041		ha						
Meserve 1971	-	M	-	SU	0.08		ha				w Nebraska 1968	xeric prairie (mid and short grass)	Three or more captures; inclusive boundary method; interior stations only.
	-	F	-	SU	0.09		ha			39			
	-	B	-	SU	0.09		ha						
Meserve 1971	-	M	-	SU	0.02		ha				w Nebraska 1968	xeric prairie (mid and short grass)	Three or more captures; minimum area method; interior stations only.
	-	F	-	SU	0.02		ha			39			
	-	B	-	SU	0.02		ha						
Meserve 1971	-	M	-	SU	0.016		ha				w Nebraska 1968	xeric prairie (mid and short grass)	Three or more captures; minimum area method; all stations.
	-	F	-	SU	0.028		ha			39			
	-	B	-	SU	0.024		ha						
Meserve 1971	-	M	-	SU	0.073		ha				w Nebraska 1968	xeric prairie (mid and short grass)	Three or more captures; inclusive boundary strip method; all stations.
	-	F	-	SU	0.093		ha			39			
	-	B	-	SU	0.089		ha						
Swihart & Slade 1989	A	M	1	-	0.0367	0.0029	SE ha			183	Kansas	NS	(1) Year-round estimates. Estimates based on a small number of recaptures per animal, i.e., as few as four.
	A	F	1	-	0.0236	0.0018	SE ha			118			
	A	M	BR	SU	0.0306	0.0034	SE ha			32			
	A	F	BR	SU	0.0232	0.0032	SE ha			19			
POPULATION DENSITY													
Carroll & Getz 1976	-	-	1	SP	78		N/ha				Illinois 1972	alfalfa field	Months: (1) April, (2) May, (3) June, (4) July, and (5) August.
	-	-	2	SP	118		N/ha						
	-	-	3	SU	96		N/ha						
	-	-	4	SU	104		N/ha						
	-	-	5	SU	81		N/ha						
Carroll & Getz 1976	-	-	1	SP	29		N/ha				Illinois 1972	bluegrass pasture	Month: (1) March, (2) April, (3) May, (4) June, and (5) July.
	-	-	2	SP	33		N/ha						
	-	-	3	SU	63		N/ha						
	-	-	4	SU	73		N/ha						
	-	-	5	SU	67		N/ha						
Gaines & Rose 1976	-	-	1	-			N/ha	0	115		e Kansas 1970-73	old field	Live trapping; data reported as minimum number alive for 0.8 ha grids. Population density in grid: (1) A; (2) B; (3) C; (4) D. Peaks generally occurred in June '72 and were followed by a decline in numbers, a recovery, and a population crash in spring '73.
	-	-	2	-			N/ha	0	91				
	-	-	3	-			N/ha	0	94				
	-	-	4	-			N/ha	0	64				

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
Getz et al. 1987	-	-	1	-			N/ha	0	37		Illinois	tallgrass prairie	Densities are peak for study periods, based on live trapping. Study period: (1) March '72 - March '77 (peak in April '73); (2) April '77 - May '84 (peak in April '83); and (3) Sept. '84 - Feb. '86 (peak in Summer of '85). For the study period, the population fluctuations in tallgrass were erratically low and there was no evidence of multianual cycles.
	-	-	2	-			N/ha	0	40	1972-86			
	-	-	3	-			N/ha	5	83				
Getz et al. 1987	-	-	1	-			N/ha	125			Illinois	alfalfa	Based on live trapping. Peak density during the six major peaks in abundance found in the study. Periods of abundance: (1) spring - fall '72; (2) fall '73; (3) summer - fall '75; (4) winter '82/'83 and summer '83; (5) summer '84 - winter '84/'85; and (6) summer/fall '85. Population was approximately zero eight times during the study.
	-	-	2	-			N/ha	45		1972-86			
	-	-	3	-			N/ha	62					
	-	-	4	-			N/ha	45					
	-	-	5	-			N/ha	55					
	-	-	6	-			N/ha	125					
Getz et al. 1987	-	-	1	-			N/ha	127			Illinois	bluegrass	Density peaks from the six major periods of abundance found in the study (based on live trapping). Abundance periods: (1) winter '72/'73; (2) summer - fall '75; (3) spring '77; (4) fall '80 - winter '81/'82; (5) fall '82 - fall '83; (6) fall '84 - fall '85. Population decreased to near zero eight times during the study.
	-	-	2	-			N/ha	60		1972-86			
	-	-	3	-			N/ha	30					
	-	-	4	-			N/ha	25					
	-	-	5	-			N/ha	38					
	-	-	6	-			N/ha	131					
Getz et al. 1987	-	-	-	-			N/ha	>125	2/13		Illinois	bluegrass	Same data as above presented as the number of years out of the total of 13 study years that the population peak density exceeded the value given.
	-	-	-	-			N/ha	>75	3/13	1972-86			
	-	-	-	-			N/ha	>50	4/13				
	-	-	-	-			N/ha	>25	7/13				
	-	-	-	-			N/ha	>5	11/13				
Krebs 1977	-	-	1	-			N/ha	94			Indiana	grassland	Live trapping; data reported as peak density of number known alive on 0.8 ha grid during a four year period. Year: (1) 1966 (<i>M. pennsylv.</i> also present in this year); (2) 1967; (3) 1968; (4) 1970.
	-	-	2	-			N/ha	99		1966-68,70			
	-	-	3	-			N/ha	54					
	-	-	4	-			N/ha	61					

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
Martin 1956	-	-	-	SU	168-234		N/ha				ne Kansas 1951	grassland	Live trapping, Hayne method; maximum move between captures. Data reflect range of monthly means for given season.
	-	-	-	WI	160-197		N/ha						
	-	-	-	SP	203-247		N/ha						
	-	-	-	FA	94-123		N/ha						
Martin 1956	-	-	-	SU	67-151		N/ha				ne Kansas 1952	grassland	Live trapping, Hayne method; maximum move between captures. Data reflect range of monthly means for given seasons.
	-	-	-	WI	116-136		N/ha						
	-	-	-	SP	136-160		N/ha						
Martin 1960	-	-	-	-	17		N/ha			54	wc Kansas	mesic mixed prairie	As cited in Meserve 1971; assumed Hayne method and maximum move between captures.
Meserve 1971	-	-	-	SU	25-35		N/ha				w Nebraska 1968-69	xeric prairie (mid and short grasses)	Hayne method; average move between captures.
	-	-	-	WI	12		N/ha						
	-	-	-	SP	10		N/ha						
Myers & Krebs 1971	-	-	1	-			N/ha	0	95		s Indiana 1967-70	grasslands	Live trapping; data reported as minimum number alive on 0.8 ha grids. Values estimated from authors' figures. Control grid: (1) A; (2) F; (3) I. Authors note that during the study period, populations never reached high densities on these study areas.
	-	-	2	-			N/ha	0	44				
	-	-	3	-			N/ha	0	14				
Wooster 1939	-	-	-	-	95		N/ha				Kansas	mixed prairie	As cited in Meserve 1971.
LITTER SIZE													
Cole & Batzli 1978	-	-	-	-	4.25			28	Illinois		NS		As cited in Keller 1985. Placental scars or embryos count; spring and summer.
Cole & Batzli 1978	-	-	-	-	5.11			19	Illinois		NS		As cited in Keller 1985. Placental scars or embryos count. Food provided to population; spring and summer.
Colvin & Colvin 1970	-	-	-	-	3.9			1	7	28	NS	lab	As cited in Keller 1985. Embryo or pup count.
Corthum 1967	-	-	-	-	3.89			2	7	134	Indiana	NS	As cited in Keller 1985. Embryo or pup count.
Fitch 1957	-	-	-	-	3.37			2	5	82	Kansas	NS	As cited in Keller 1985. Embryo or pup count; pooled yearly values.

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
Jameson 1947	-	-	-	-	3.4			1	7	58	Kansas	NS	As cited in Keller 1985. Embryo or pup count.
Keller & Krebs 1970	-	-	-	-	3.27			1	6	160	Indiana	NS	As cited in Keller 1985. Embryo or pup count.
Martin 1956	-	-	-	-	3.18	0.24	SD	1	6	65	ne Kansas 1950-52	grassland	Pup count.
Nadeau 1985	-	-	-	-	3.9	0.4	SD			NS		lab	Pup count. Calculated by author based on four studies (raw data not provided).
Nadeau 1985	-	-	-	-	3.5	0.4	SD			NS		field-caught	Pup count. Calculated by author based on four studies (raw data not provided).
Quick 1970	-	-	-	-	3.35			1	6	31	Kentucky	NS	As cited in Keller 1985. Embryo or pup count.
Richmond 1967	-	-	-	-	3.17			1	8	280	NS	lab	As cited in Keller 1985. Embryo or pup count.
Rolan & Gier 1967	-	-	-	-	4.19				198	Kansas		NS	As cited in Keller 1985. Embryo or pup count; winter and spring.
Rose & Gaines 1978	-	-	-	-	3.43				181	Kansas		NS	As cited in Keller 1985. Embryo or pup count; data pooled from several years.

DAYS GESTATION

Fitch 1957	-	-	-	-	< 20	days			NS		NS		As cited in Nadeau 1985.
Johnson & Johnson 1982	-	-	-	-	20-23	days			NS		NS		General value for all <i>Microtus</i> species.
Keller 1985	-	-	-	-	21	days			NS		NS		
Kenney et al. 1977	-	-	-	-	22.8	days			NS		NS		As cited in Nadeau 1985.
Martin 1956	-	-	-	-	21	days			ne Kansas 1950-52		grassland		
Morrison et al. 1976	-	-	-	-	21	days			NS		NS		As cited in Nadeau 1985.
Richmond & Conaway 1969	-	-	-	-	21	days			NS		NS		As cited in Nadeau 1985.

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
AGE AT WEANING													
Thomas & Birney 1979	-	B	-	-	21		days			NS	lab	Note at 20 day preweaning period.	
AGE AT SEXUAL MATURITY													
Gier & Cooksey 1967	-	F	-	-	35		days			NS	NS	As cited in Stalling 1990.	
	-	M	-	-			days	42	45				
Johnson & Johnson 1982	-	F	-	-			weeks	3		NS	NS	General value for all <i>Microtus</i> species.	
	-	M	-	-			weeks	6-8					
Martin 1956	-	F	1	-			days	26		1	ne Kansas 1950-52	grasslands	
	-	M	-	-			weeks	6				Female weighed 28 g.	
ANNUAL MORTALITY													
Abramsky & Tracy 1980	-	B	-	-	93		%/year			150	ne Colorado	short-grass prairie	
	-	B	-	SU	28		%/month			150A		Seasonal mortality rates based on mean disappearance rate per month.	
	-	B	-	FA	15		%/month			148			
	-	B	-	WI	15		%/month			150			
	-	B	-	SP	22		%/month			150A			
LONGEVITY													
Martin 1956	-	-	-	-	1.0		years	1.8		ne Kansas 1950-52	grassland	Maximum is an estimate of the age of the oldest individual found, based on recapture of animal tagged as a juvenile.	

***** SEASONAL ACTIVITIES *****

Reference	Begin	Peak	End	Location	Habitat	Notes
MATING						
Keller 1985; Martin 1956		May to Oct		NS	NS	
PARTURITION						
Keller 1985; Martin 1956		May to Oct		NS	NS	
FALL MOLT						
Jameson 1947		any time		NS	NS	Cited in Stalling 1990.

***** MEADOW VOLE *****

*** NORMALIZING AND CONTACT RATE FACTORS ***

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
BODY WEIGHT													
Anderson et al. 1984	B	B	-	SP	26.0		g			40	Manitoba	marsh	Estimated from graph on page 309.
	B	B	-	SU	24.3		g			34	1976-77		
	B	B	-	FA	17.0		g			21			
	B	B	-	WI	17.5		g			7			
Boonstra & Rodd 1983	A	M	-	SP	52.4		g				Ontario, CAN	grassland	
	A	F	-	SP	43.5		g						
Boonstra & Rodd 1983	A	-	-	-			g			33	Toronto, CAN	NS	
Brochu et al. 1988	A	M	-	SU	40.0	8.3 SE	g			33	Quebec, CAN	old field	
	A	F	-	SU	33.4	8.2 SE	g			55			
Brooks & Webster 1984	B	B	1	SU	32.6	11.8 SD	g			152	Ontario, CAN	grassland	Trap period: (1) 7/7-8/31; (2) 9/1-10/19; (3) 10/20-12/15; (4) 1/5-2/20; (6) 2/21-4/15.
	B	B	2	FA	31.3	10.0 SD	g			57	1977-78		
	B	B	3	FA	32.6	7.9 SD	g			158			
	B	B	4	WI	34.2	5.2 SD	g			41			
	B	B	5	WI	33.3	6.4 SD	g			45			
Dark & Zucker 1986	A	M	1	-	54		g			14	NS	lab	(1) Group 1 - baseline - 14L:10D photoperiod; (2) Group 1 ten weeks later, same photoperiod; (3) Group 2 - baseline 14L:10D photoperiod; (4) Group 2 after 10 weeks on short photoperiod (i.e., 10L:14D).
	A	M	2	-	58		g			14			
	A	M	3	-	57		g			17			
	A	M	4	-	45		g			17			
Dueser et al. 1981	-	-	-	-			g			30	NS	NS	Cutoff weight between residents and dispersers. As cited in Tamarin 1984.
Golley 1961	N	-	-	-	2-10		g				s Michigan	old field	N = neonate (0-10 days old); J = post-nestling juvenile (11-21 days old); Y = young adult, Adults: (1) 34-54 days old; (2) 55-103 days old; (3) 104+ days old.
	J	-	-	-	11-20		g				1956-57		
	Y	-	-	-	21-30		g						
	A	-	1	-	31-40		g						
	A	-	2	-	41-50		g						
	A	-	3	-	> 51		g						
Lomolino 1984	-	-	-	-	40		g				New York	Thousand Islands	

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
Mihok 1984	A	M	BR	SU	23.6		g	20.2	27.4		Manitoba, CAN	boreal	
	A	F	BR	SU	18.8		g	17.7	20.1	1076			(1) Total sample size, both sexes. Factor is weight at sexual maturity. Min and Max values are actually 95% fiducial limits.
	-	-	1	-									
Millar 1987	A	B	-	SU	28.1		g				Alberta, CAN 1980-83	NS	
Myers & Krebs 1971	A	M	1	-	32.9	0.2	SE g				s Indiana 1967-69	grasslands	Mean weights of resident voles in: (1) study grid F; (2) study grid I. Data pooled over complete study period (all seasons). 2 SE given by authors (to one significant digit) divided by 2 to give SE shown here.
	A	F	1	-	39.1	0.25	SE g						
	A	M	2	-	35.5	0.1	SE g						
	A	F	2	-	39.0	0.3	SE g						
Reich 1981	A	M	-	-	44.2	6.29	SD g				NS	NS	
	A	F	-	-	44.0	10.25	SD g						
Tamarin 1977b	-	M	1	WI	33		g				Massachusetts 1972-75	coastal field	Dispersing voles; values estimated from figure. Year: (1) 1972; (2) 1973.
	-	F	1	WI	34		g						
	-	M	2	SU	42		g						
	-	F	2	SU	39		g						
	-	M	2	WI	42		g						
	-	F	2	SU	41		g						
Tamarin 1977b	-	M	1	WI	36		g				Massachusetts 1972-75	coastal field	Resident voles; values estimated from figure. Year: (1) 1972; (2) 1973.
	-	F	1	WI	41		g						
	-	M	2	SU	40		g						
	-	F	2	SU	39		g						
	-	M	2	WI	43		g						
	-	F	2	SU	38		g						
NEONATE WEIGHT													
Hamilton 1941	N	-	-	-	2.1		g	1.6	3.0		NS	NS	As cited in Reich 1981 and Johnson and Johnson 1982.
Innes & Millar 1981	N	-	-	-	2.3	0.1	SD g				NS	NS	As cited in Nadeau 1985.
Lee & Horvath 1969	N	-	-	-	2.0-3.0		g				NS	NS	As cited in Nadeau 1985.
McShea & Madison 1989	N	-	-	-	3		g				Pennsylvania	NS	As cited in McShea 1989.

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
GROWTH RATE													
Barbehenn 1955	-	-	1	-	0.40		g/day	0.2	0.5	NS		field study	Calculated to 20 days of age. Adult body mass = 35 g. Season of birth: (1) June - Aug; (2) July - Sept. As cited in Wunder 1985.
	-	-	2	-	0.20		g/day						
Golley 1961	-	-	1	-	0.95		g/day			s Michigan 1956-57		old field	Age: (1) from birth to 21 days; (2) 22 - 23 days; (3) 34 - 54 days; (4) 55 - 103 days. Adult body weight = 51+ grams.
	-	-	2	-	0.81		g/day						
	-	-	3	-	0.45		g/day						
	-	-	4	-	0.19		g/day						
Hamilton 1941	-	-	-	-	1.0		g/day			NS		NS	First 25-30 days after birth. As cited in Reich 1981.
Hamilton 1937	-	-	-	-	0.80		g/day			NS		lab	Calculated to 20 days of age; adult body mass = 48 g. As cited in Wunder 1985.
Innes & Millar 1979	-	-	-	-	0.67		g/day			NS		lab	Calculated to 20 days of age; adult body mass = 29 g. As cited in Wunder 1985.
McShea & Madison 1989	-	-	-	-	0.44		g/day			Pennsylvania		NS	As cited in McShea 1989.
Morrison et al. 1977	-	-	-	-	0.65		g/day			NS		lab	Calculated to 20 days; adult body weight = 40 g. As cited in Wunder 1985.
BODY FAT													
Mihok et al. 1985	B	B	1	SP	1.34	0.125	SE g			17	Manitoba, CAN	old fields	Two different years: (1) 1971; (2) 1975.
	B	B	2	SP	1.09	0.078	SE g			26	1971, 1975		
Millar 1987	J	F	-	SU	0.37	0.04	SE g			10	Alberta, CAN	NS	
	A	F	G	SU	1.20	0.15	SE g			10	1980-83		
	A	F	L	SU	0.60	0.09	SE g			10			
Millar 1987	J	M	NB	SU	0.47	0.05	SE g			10	Alberta, CAN	NS	
	A	M	-	SU	0.93	0.15	SE g			10	1980-83		
Schwartz & Mihok 1983	B	-	BR	-	1.17		g			Manitoba, CAN 1973-78		NS	(1) Total sample size, both sexes.
	B	-	NB	-	0.908		g			1313			
	-	-	1	-									

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
LEAN (DRY) BODY WEIGHT													
Mihok et al. 1985	B B	B B	1 2	SP SP	5.7 5.2	0.1 0.1	SE g SE g				Manitoba, CAN 1971, 1975	old fields	Two different years: (1) 1971; (2) 1975.
Millar 1987	J A A	F F F	- G L	SU SU SU	2.91 5.40 5.58	0.28 0.40 0.21	SE g SE g SE g			10 10 10	Alberta, CAN 1980-83	NS	
Millar 1987	J A	M M	- -	SU SU	3.93 6.58	0.18 0.36	SE g SE g			10 10	Alberta, CAN 1980-83	NS	
Schwartz & Mihok 1983	- - -	- - 1	BR NB -	-	6.5 5.1 -		g g -			1313	Manitoba, CAN 1973-78	NS	(1) Total sample size for both breeding and nonbreeding adults.
METABOLIC RATE (OXYGEN)													
Bradley 1976	A	-	BA	-	46.3		LO2/kg-day				New York	lab	Body weight of vole = 39.0 g. As cited in Wunder 1985.
Morrison 1948	-	-	AD	-	82.8	12	SD LO2/kg-day	43.2	146	4	ne United States	lab	AD = average daily metabolic rate in captivity. Two runs with two individuals each. Temperature 15 to 25 C. Weight of animals = 26.3 to 32.0 g.
Pearson 1947	A A	- -	BA AD	-	53 80		LO2/kg-day LO2/kg-day	58	89	4 4	Pennsylvania	lab	Mean body weight of voles = 31.2 g. AD = average daily. Test conditions: 24 hour runs at 25-30 degrees C, food and water available. Basal estimate is lowest value from the 24 hour run - basal test produced higher value. Low end of AD range is value for 40 g vole, high end is for 26 g vole.
Wiegert 1961	A	-	BA	-	60.0		LO2/kg-day				NS	NS	Body weight = 35.6 g. As cited in Deavers and Hudson 1981.

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
METABOLIC RATE (KCAL BASIS)													
Pearson 1947	A -	BA -			295		kcal/kg-d			4	Pennsylvania	lab	Mean body weight of voles = 31.2 g. AD = average daily. Calculated from oxygen consumption. Test conditions: 24 hour runs at 25-30 degrees C, food and water available. Basal estimate based on lowest oxygen consumption value from the 24 hour run - basal test produced higher value.
	A -	AD -			395		kcal/kg-d			4			
FOOD INGESTION RATE													
Dark et al. 1983	A M	1 -			410	10 SE	kcal/kg-d			12	NS	lab	Daily food intake during 10th week exposed to photoperiod (1) long day 14L:10D; (2) short day 10L:14D.
	A M	2 -			370	20 SE	kcal/kg-d			12			
Ognev 1950	- - - -	0.30 -					g/g-day				Russia	NS	Values are the low and high ends of a range. As cited in Johnson and Johnson 1982.
	- - - -	0.35					g/g-day						
WATER INGESTION RATE													
Ernst 1968	- - - -	0.21			0.02 SE		g/g-day				NS	NS	As cited in Reich 1981.
THERMONEUTRAL ZONE													
Wiegert 1961	- - - -						degrees C			25	29	NS	NS
*** DIET ***													
Reference	Age	Sex	Food type	Spring	Summer	Fall	Winter	N	Location	Habitat - Measure	Notes		
Lindroth & Batzli 1984	- -		dicot shoots	41	60	66	12		Illinois 1980-83	bluegrass			
			monocot shoots	50	26	9	40			-			
			seeds	1	9	1	13			% wet volume;			
			roots	0	1	12	34			stomach contents			
			fungi	6	4	10	0						
			insects	2	0	2	1						
			(sample size)	(11)	(15)	(13)	(11)						

Reference	Age	Sex	Food type	Spring	Summer	Fall	Winter	N	Location	Habitat - Measure	Notes
Lindroth & Batzli 1984	- -		dicot shoots	53	65	41	41		Illinois 1980-83	tallgrass prairie	
			monocot shoots	23	29	12	5			-	
			seeds	7	1	16	36			% wet volume;	
			roots	4	0	6	17			stomach contents	
			fungi	12	1	20	0				
			insects	1	4	5	1				
			(sample size)	(12)	(25)	(17)	(11)				
Lindroth & Batzli 1984	- -		plant material only:						Illinois 1980-83	bluegrass	
			monocot shoots:							-	Percent of plant material in
			<i>Poa pratensis</i>	29	20	8	40			% wet volume;	the diet by species.
			<i>Bromus inermis</i>	9	4	0	0			stomach contents	
			monocot roots	0	1	11	24				
			dicot shoots:								
			<i>Ambrosia trifida</i>	18	6	3	0				
			<i>Taraxacum officina</i>	7	18	45	0				
			<i>Trifolium pratense</i>	0	27	11	12				
			dicot roots				1				
			other unknown	30	21	10	24				
			(sample size)	(11)	(15)	(13)	(11)				
Lindroth & Batzli 1984	- -		monocot shoots						Illinois 1980-83	tallgrass prairie	
			<i>Andropogon gerardii</i>	11.8	20.0	9.4	1.6			-	Percent of plant material in the
			<i>Poa pratensis</i>	0.0	0.0	0.0	2.9			% wet volume;	diet by species.
			dicot shoots							stomach contents	
			<i>Lespedeza cuneata</i>	23.7	27.9	26.1	10.6				
			<i>Penstemon digitalis</i>	12.0	16.1	9.3	22.6				
			(sample size)	(12)	(25)	(17)	(11)				
Zimmerman 1965	B	B	<i>Poa compressa</i>	32.1				43	Indiana 1964-65	various	
			<i>Panicum capillare</i>	24.7						-	
			<i>Muhlenbergia sobolifera</i>	14.6						% wet volume;	
			misc. vegetation	7.4						stomach contents	
			<i>Plantago lanceolata</i>	5.8							Season = year round. Species found
			<i>Achillea millefolium</i>	4.7							to occur in fields containing at
			<i>Endogone</i>	2.1							least 50% grasses and abundant
			<i>Taraxacum officinale</i>	2.1							cover.
			<i>Microrhizus flesh</i>	2.1							
			<i>Lepidopterous larvae</i>	1.7							
			<i>Oxalis sp.</i>	1.6							
			misc. Coleoptera	1.5							
			<i>Phleum pratense</i>	1.4							
			unident. roots	0.4							
			unident. insects	0.4							

*** POPULATION DYNAMICS ***

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
HOME RANGE SIZE													
Ambrose 1973	-	-	-	SU			ha	0.0089	0.027		New York	NS	
Douglass 1976	-	-	-	SU	0.014		ha			14	Montana	alluvial bench	
	-	-	-	WI	0.0002					8			
Getz 1961b	-	M	-	FA			ha	0.043	0.097		Michigan	old field	Values estimated from figure; home ranges calculated using the exclusive boundary method.
	-	F	-	FA			ha	0.019	0.041		1957-58		Population density ranges (N/ha): fall 6-10; winter 7-13; spring 15-17; summer 16-18.
	-	M	-	WI			ha	0.013	0.033				
	-	F	-	WI			ha	0.012	0.013				
	-	M	-	SP			ha	0.043	0.057				
	-	F	-	SP			ha	0.023	0.032				
	-	M	-	SU			ha	0.051	0.078				
	-	F	-	SU			ha	0.058	0.061				
Getz 1961b	-	M	-	FA			ha	0.041	0.050		Michigan	marsh	Values estimated from figure; home ranges calculated using the exclusive boundary method.
	-	F	-	FA			ha	0.041	0.044		1957-58		Population density ranges (N/ha): fall 28-50; winter 15-35; spring 22-48; summer 38-62.
	-	M	-	WI			ha	0.042	0.078				
	-	F	-	WI			ha	0.040	0.085				
	-	M	-	SP			ha	0.068	0.070				
	-	F	-	SP			ha	0.043	0.046				
	-	M	-	SU			ha	0.042	0.059				
	-	F	-	SU			ha	0.038	0.049				
Madison 1980	A	M	BR	SU	0.01923	0.01097	SD ha			16	Virginia	1975	old field
	A	F	BR	SU	0.00686	0.00394	SD ha			15			
Ostfeld et al. 1988	A	F	1	SU	0.00966	0.00458	SD ha			13	Massachusetts	grassy meadow	Home range of voles radiocollared from Aug 20-Sept 1. Calculation method: (1) 50% - represents core area of range; (2) 95 % - represents core area and peripheral areas; (3) minimum polygon method.
	A	F	2	SU	0.04977	0.03465	SD ha			13	1986		
	A	F	3	SU	0.03734	0.01982	SD ha			13			
Ostfeld et al. 1988	A	M	1	SU	0.01955	0.00918	SD ha			15	Massachusetts	grassy meadow	Home range of voles radiocollared from Aug 20-Sept 1. Calculation method: (1) 50% - represents core area of range; (2) 95 % - represents core area and peripheral areas; (3) minimum polygon method.
	A	M	2	SU	0.11836	0.05331	SD ha			15	1986		
	A	M	3	SU	0.08328	0.03745	SD ha			15			

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
Tamarin 1977b	A	F	-	-			ha	0.001			Massachusetts 1972-75	coastal field	As cited in McShea 1989; McShea appears to have calculated this value from movement data provided in Tamarin 1977b.
Van Vleck 1969	-	M	1	SU	0.0502		ha			102	w New York 1962	old fields	Live trapping; population densities described as high (32-119 voles/ha). Ranges determined based on the number of stations at which vole was trapped; data shown here based on voles trapped at a minimum of 5 stations. Calculation method: (1) minimum area; (2) exclusive strip; (3) inclusive strip.
	-	F	1	SU	0.0405		ha			38			
	-	M	2	SU	0.1283		ha			102			
	-	F	2	SU	0.1145		ha			38			
	-	M	3	SU	0.1554		ha			102			
	-	F	3	SU	0.1299		ha			38			
Van Vleck 1969	-	M	1	SU	0.0652		ha			28	w New York 1961	old fields	Live trapping; population densities described as moderate (10-86 voles/ha). Ranges determined based on the number of stations at which vole was trapped; data shown here based on voles trapped at a minimum of 5 stations. Calculation method: (1) minimum area; (2) exclusive strip; (3) inclusive strip.
	-	F	1	SU	0.0469		ha			8			
	-	M	2	SU	0.1550		ha			28			
	-	F	2	SU	0.1246		ha			8			
	-	M	3	SU	0.1866		ha			28			
	-	F	3	SU	0.1433		ha			8			
POPULATION DENSITY													
Boonstra & Rodd 1983	-	B	-	-			N/ha	96	549		Ontario, CAN	grassland	
Getz et al. 1987	-	-	1	-			N/ha		131		c Illinois 1972-86	tallgrass	Values estimated from figures. Population showed a gradual increase after entering habitat in 1973: (1) peak for study period; (2) range found from summer 1977 - 1983; (3) population increased from the min shown to the max from Sept '84 to Nov '85 following a burn.
	-	-	2	-			N/ha	25	100				
	-	-	3	-			N/ha	7	46				
Getz et al. 1987	-	-	1	-			N/ha	9	83		c Illinois 1972-86	bluegrass	Values estimated from figures. Population showed essentially annual fluctuations from 1975-82, and after '82 remained low through end of study. Period from (1) 1975-82; (2) 1982-85.
	-	-	2	-			N/ha	0	25				

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
Getz et al. 1987	-	-	-	-	-		N/ha	0	70	c Illinois 1972-86	alfalfa		Values estimated from figures. Only occurred in this habitat from Oct. 1976 - October 1980; during this period populations showed annual fluctuations in density.
Getz 1961a	-	-	-	FA			N/ha	7	11	Michigan 1957-58	old field		Estimated from figure.
	-	-	-	WI			N/ha	6	13				
	-	-	-	SP			N/ha	13	20				
	-	-	-	SU			N/ha	17	20				
Getz 1961a	-	-	-	FA			N/ha	28	51	Michigan 1957-58	grass-sedge marsh		Estimated from figure.
	-	-	-	WI			N/ha	20	51				
	-	-	-	SP			N/ha	22	53				
	-	-	-	SU			N/ha	38	64				
Getz 1961a	-	-	-	FA		0	N/ha	0	6	Michigan 1957-58	Potentilla marsh		Estimated from figure.
	-	-	-	WI			N/ha	0	7				
	-	-	-	SP			N/ha						
	-	-	-	SU			N/ha	0	10				
Krebs 1977	-	-	1	SP			N/ha		143	Indiana 1966, 68, 70	grassland		Live trapping; reported as peak density of number known alive on 0.8 ha grid during three years.
	-	-	2	SP			N/ha		119				Year: (1) 1966 (peak density of <i>M. ochrogaster</i> also present during this peak); (2) 1968; (3) 1970.
	-	-	3	SP			N/ha		135				
Lindroth & Batzli 1984	-	-	-	-			N/ha	2	28	Illinois 1980-83	bluegrass field		
Lindroth & Batzli 1984	-	-	-	-			N/ha	26	128	Illinois 1980-83	tallgrass prairie		
Myers & Krebs 1971	-	-	1	-			N/ha	25	163	s Indiana 1967-70	grasslands		Live trapping; data reported as minimum number alive on 0.8 ha grids. Values estimated from figures for control grid: (1) A; (2) F; (3) I.
	-	-	2	-			N/ha	0	50				
	-	-	3	-			N/ha	6	95				
Ostfeld et al. 1988	-	-	-	SP	28		N/ha			Massachusetts	grassy meadow		
	-	-	-	SU	85		N/ha						
	-	-	-	WI	33		N/ha						
Tamarin 1977a	-	-	1	-			N/ha		160	se Mass. 1972-75	grassy field	(1,2) Two different study plots.	
	-	-	2	-			N/ha		181				
Van Vleck 1969	-	-	1	SU			N/ha	10	86	w New York 1961-62	old field		Density in: (1) 1961 (described as moderate); (2) 1962 (described as high).
	-	-	2	SU			N/ha	32	119				

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
LITTER SIZE													
Beer & MacLeod 1961	-	-	-	-	5.72			1	11	251	Minnesota	NS	As cited in Keller 1985. All months, embryo or pup count.
Corthum 1967	-	-	-	-	4.46			1	9	153	Indiana	NS	As cited in Keller 1985. Samples from 11 months; pup or embryo count.
Goin 1943	-	-	-	-	6.05			1	8	24	Pennsylvania	NS	As cited in Keller 1985. Embryo or pup count.
Harris 1953	-	-	-	-	3.65					16	Maryland	NS	As cited in Keller 1985. Embryo or pup count.
Iverson & Turner 1976	-	-	-	-	3.82			1	11	312	Manitoba, CAN	NS	As cited in Keller 1985. Six years of data, months variable between years. Embryo or pup count.
Kott & Robinson 1963	-	-	-	-	5.5			1	8	124	Toronto, Ont. CAN	NS	As cited in Keller 1985. Summer samples; embryo or pup count.
Millar 1987	-	-	-	-	6.0						Alberta, CAN 1980-83	NS	
Townsend 1935	-	-	-	-	5.07			2	9	41	New York	NS	As cited in Keller 1985. Embryo or pup count.
LITTERS/YEAR													
Bailey 1924	-	-	-	-			litters/yr		17		NS	captive	As cited in Johnson and Johnson 1982.
DAYS GESTATION													
Dieterich & Preston 1977	-	-	-	-	21		days				NS	NS	As cited in Reich 1981.
Innes & Millar 1981	-	-	-	-	20		days				NS	NS	As cited in Nadeau 1985.
Johnson & Johnson 1982	-	-	-	-	20-23		days				NS	NS	Value refers to all <i>Microtus</i> species.
Kenney et al. 1977	-	-	-	-	21.0	0.2 SD	days				NS	NS	As cited in Nadeau 1985.
Lee & Horvath 1969	-	-	-	-	21		days				NS	NS	As cited in Nadeau 1985.

Reference	Age	Sex	Cond	Seas	Mean	SD/SE	Units	Minimum	Maximum	N	Location	Habitat	Notes
AGE AT WEANING													
Benton 1955	-	-	-	-	21		days			NS	NS	As cited in Johnson and Johnson 1982.	
Golley 1961	-	-	-	-	21		days			s Michigan	NS		
Hamilton 1941	-	-	-	-			days	12	14	NS	NS	As cited in Reich 1981.	
McShea 1989	-	-	-	-	21		days			NS	NS	Study notes that Madison (1978), and Innes and Millar (1981) suggest the age at weaning may be less than 21 days.	
AGE AT SEXUAL MATURITY													
Johnson & Johnson 1982	-	F	-	-			weeks		3	NS	NS	Values refer to all <i>Microtus</i> species.	
	-	M	-	-			weeks	6-8					
ANNUAL MORTALITY													
Golley 1961	N	-	1	-	50%		0 to 10 g			s Michigan 1956-57	old field	Age classes for which mortality was estimated: (1) nestlings; (2) post-nestling juveniles; (3) young adults; (4) adults; and (5) large (old) adults.	
	J	-	2	-	61%		11 to 20 g						
	Y	-	3	-	58%		21 to 30 g						
	A	-	4	-	53%		31 to 50 g						
	A	-	5	-	100%		> 50 g						
Mihok 1984	J	-	-	-	81.2%		1st 28 d			se Manitoba, CAN 1968-78	old field	Juvenile mortality during first 28 days; based on juvenile survival rate (from birth to recruitment) of 18.8%.	
LONGEVITY													
Beer & MacLeod 1961	-	-	-	-	2-3		months			NS	NS	As cited in Reich 1981.	
Hamilton 1941	-	-	-	-	10-16		months			NS	NS	As cited in Reich 1981.	
Johnson & Johnson 1982	-	-	-	-			months		24	NS	NS		
Ostfeld et al. 1988	A	B	-	SU	11.3	8.0	SD weeks		28	Massachusetts 1986	grassy meadow	Average longevity of adult voles after time of first capture (>32 grams = adult).	

*** SEASONAL ACTIVITIES ***

Reference	Begin	Peak	End	Location	Habitat	Notes
MATING						
Boonstra & Rodd 1983	Apr		Dec	Ontario, CAN 1979	grassland	
Boonstra & Rodd 1983	Apr		mid Sep	Ontario, CAN 1980	grassland	
Getz 1960		Oct - Nov		Michigan 1957-58	marsh	Fall - winter peak; as cited in Getz 1961b.
Getz 1960		Apr-June		Michigan 1957-58	marsh	Spring - summer peak; as cited in Getz 1961b.
Mihok 1984	Apr 3		Oct 13	Manitoba, CAN	boreal	Begin = >50% reproductively active; End= >50% reproductively inactive; males.
Mihok 1984	Apr 26		Oct 12	Manitoba, CAN	boreal	Begin = >50% reproductively active; End= >50% reproductively inactive; females.
Mihok 1984	Apr		Oct	Manitoba, CAN	boreal	Both sexes.
DISPERSAL						
Myers & Krebs 1971		fall/winter		Indiana	grassland	Peaks of dispersal in fall and winter.
Tamarin 1977b		summer		Massachusetts 1972-75	coastal field	Peak for females.
Tamarin 1977b		winter		Massachusetts 1972-75	coastal field	Peak for males.